REMARKS

The Decision of August 24, 2009, has been received and reviewed.

Claims 1-5, 11-17, 25-28, and 33-38 were previously pending and under consideration in the above-referenced application, each standing rejected.

Claims 3 and 13 have been canceled without prejudice or disclaimer.

Reconsideration of the above-referenced application is respectfully requested.

Rejections under 35 U.S.C. § 103(a)

Claims 1-5, 11-17, 25-28, and 33-38 have been rejected under 35 U.S.C. § 103(a).

There are several requirements in establishing a *prima facie* case of obviousness against the claims of a patent application. All of the limitations of the claim must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 985 (CCPA 1974); *see also* MPEP § 2143.03. Even then, a claim "is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *KSR Int'l Co. v. Teleflex Inc.*, 82 USPQ2d 1385, 1396 (2007). The Office must also establish that one of ordinary skill in the art would have had a reasonable expectation of success that the purported modification or combination of reference teachings would have been successful. *In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986). There must also "be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *Id.*, quoting *In re Kahn*, 441, F.3d 977, 988 (Fed. Cir. 2006). That reason must be found in the prior art, common knowledge, or derived from the nature of the problem itself, and not based on the Applicant's disclosure. *DyStar Textilfarben GmbH & Co. Deutschland KG v. C. H. Patrick Co.*, 464 F.3d 1356, 1367 (Fed. Cir. 2006). A mere conclusory statement that one of ordinary skill in the art would have been motivated to combine or modify reference teachings will not suffice. *KSR* at 1396.

Tsai in View of Lancaster

Claims 1-4, 11-14, 16, 25-27, 33-35, and 37 were rejected under 35 U.S.C. § 103(a) for being drawn to subject matter which is allegedly not patentable over the subject matter taught by

U.S. Patent 5,712,185 to Tsai et al. (hereinafter "Tsai"), in view of teachings from U.S. Patent 4,835,584 to Lancaster (hereinafter "Lancaster").

Independent claim 1 is drawn to a method for forming a shall trench isolation (STI) structure in a semiconductor substrate. The method of independent claim 1, as amended, includes, among other things, "removing a portion of [a] buffer film material, a portion of [a] dielectric material, and material from the semiconductor substrate to form at least one trench extending into the semiconductor substrate, the trench including at least one side wall that *lacks recesses*..." (emphasis supplied).

Independent claim 11, as amended, recites a method that includes "etching through [a] buffer material, through [a] dielectric material, and into [a] semiconductor substrate to define at least one trench in the semiconductor substrate *without substantially recessing* the dielectric material relative to the buffer material..." (emphasis supplied).

As amended, independent claim 25 recites a method for forming an STI structure in a semiconductor device structure that includes a "trench including at least one *continuous* side wall extending through [a] buffer film layer and [a] dielectric layer and into [a] semiconductor substrate..." (emphasis supplied).

Independent claim 33, as amended, is directed to a method for forming an STI structure in a semiconductor device structure that includes "a trench including at least one side wall *without recesses* extending through [a] buffer film layer and [a] dielectric layer and into [a] semiconductor substrate..." (emphasis supplied).

FIG. 3E of Tsai clearly shows that, as material is removed from a silicon nitride dielectric layer 34, the side wall of the silicon nitride dielectric layer 34 is recessed, or undercut, relative to the corresponding side walls of the overlying sacrificial layer 36 and the trench in the underlying substrate 30. *See also* col. 3, lines 19-33.

Lancaster lacks any teaching or suggestion of a structure that includes a buffer material, a dielectric material, and a semiconductor substrate and, thus, of a method in which a trench is formed in these materials *without forming recesses*.

As neither Tsai nor Lancaster teaches or suggests a method in which material may be removed and/or a trench may be formed through buffer material, dielectric material, and into a

semiconductor substrate without forming (or substantially forming) recesses in a sidewall, it is respectfully submitted that the teachings of Tsai and Lancaster do not support a *prima facie* case of obviousness against any of amended independent claims 1, 11, 25, or 33. It is, therefore, respectfully submitted that, under 35 U.S.C. § 103(a), each of these claims is allowable over r

Claims 2 and 4 are both allowable, among other reasons, for depending from independent claim 1, which is allowable.

Claims 12, 14, and 16 are each allowable, among other reasons, for depending from independent claim 11, which is allowable.

Claims 26 and 27 are both allowable, among other reasons, for respectively depending from independent claim 25, which is allowable.

Each of claims 34, 35, and 37 is allowable, among other reasons, for depending from independent claim 33, which is allowable.

Claims 3 and 13 have been canceled without prejudice or disclaimer, rendering the rejections of these claims moot.

Tsai, Lancaster, and the Examiner's Comment

Claims 17 and 38 stand rejected under 35 U.S.C. § 103(a) for reciting subject matter which is allegedly unpatentable over that taught in Tsai, in view of the teachings of Lancaster and, further, in view of the Examiner's Comment.

Claim 17 is allowable, among other reasons, for depending indirectly from claim 11, which is allowable.

Claim 38 is allowable, among other reasons, for depending indirectly from claim 33, which is allowable.

Tsai, Lancaster, and Lee

Claims 5, 15, 28, and 36 stand rejected under 35 U.S.C. § 103(a) for reciting subject matter which is purportedly unpatentable over that the subject matter taught in Tsai, in view of teachings from Lancaster and, further, in view of the teachings of Lee, HS, et al., "An Optimized

Densification of the Filled Oxide for Quarter Micron Shallow Trench Isolation (STI)," 1996 IEEE Symposium on VLSI Technol. Dig. of Technical Papers, pages 158-59.

Claims 5, 15, 28, and 36 are allowable, among other reasons, for depending directly from claims 1, 11, 25, and 33, respectively, which are allowable.

CONCLUSION

It is respectfully submitted that each of claims 1, 2, 4, 5, 11, 12, 14-17, 25-28, and 33-38 is allowable. An early notice of the allowability of each of these claims is respectfully solicited, as is an indication that the above-referenced application has been passed for issuance. If any issues preventing allowance of the above-referenced application remain which might be resolved by way of a telephone conference, the Office is kindly invited to contact the undersigned attorney.

Respectfully submitted,

Brick G. Power
Registration No. 38,581
Attorney for Applicant
TRASKBRITT, PC
P.O. Box 2550
Salt Lake City, Utah 84110-2550
Telephone: 801-532-1922

Date: October 26, 2009
BGP/ec
Document in ProLaw